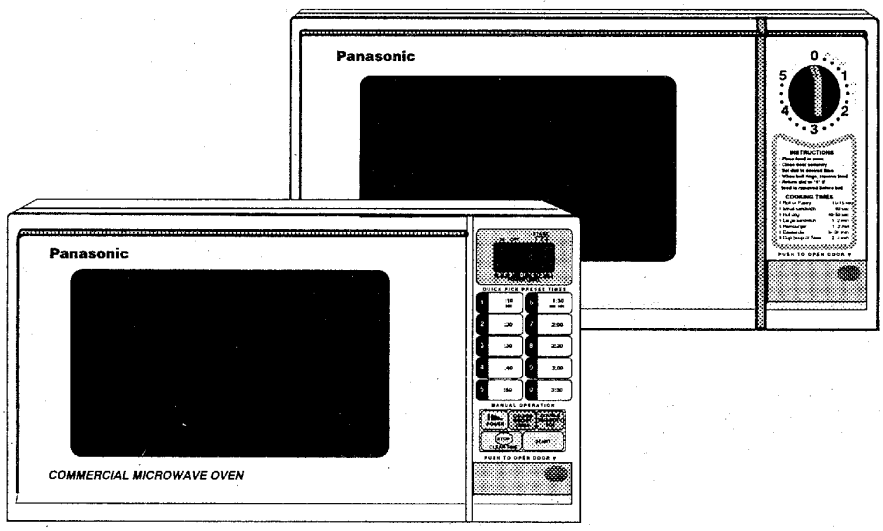
ORDER NO. MOD9503041C1
E10

Service Manual

Commercial Microwave Oven

NE-8021AR, NE-8022CR
NE-8051AR, NE-8052CR



Specifications

Power Source :	120 V AC Single Phase 60 Hz
Power Requirement :	1,380 W (12.0 A)
Output :	800 W full power (IEC705-88)
Microwave Frequency :	2,450 MHz
Timer :	5 Min. Rotary·····NE-8021AR, NE-8022CR 99 min. 99 sec.·····NE-8051AR, NE-8052CR
Outside Dimensions :	12" (H) × 20-1/8" (W) × 14-3/16" (D) 306 mm (H) × 510 mm (W) × 360 mm (D)
Oven Cavity Dimensions :	8-1/16" (H) × 13" (W) × 13" (D) 205 mm (H) × 330 mm (W) × 330 mm (D)
Weight :	Approx. 32 lbs. Approx. 14 kg
Specifications subject to change without notice.	

Panasonic®

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

WARNING

1. This product should be serviced only by trained qualified personnel.
2. Though this product has been manufactured in compliance with:
   "Federal Performance Standard 21 CFR Subchapter J" (D.H.H.S.): U.S.A. models
   or "Radiation Emitting Devices Act" (Health and Welfare Canada): Canadian models
   it is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
3. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage".
4. If the unit cannot be repaired on site, advise the customer not to use until unit be repaired.
5. Any serviceman who learns of any accident pertaining to microwave radiation leakage including the oven operating with open door should immediately notify the appropriate address listed below and Center for Devices and Radiological Health, DHHS.

IN U.S.A. (MSC)	Matsushita Services Company 50 Meadowland Parkway, Secaucus, New Jersey 07094 Attention: Technical Service Division. (201) 348-7000	IN PUERTO RICO (PSC)	PSC San Gabriel Industrial Park 65th Infantry Ave. Km.9.5 Carolina, Puerto Rico 00985 (809) 750-4300
		IN CANADA (MELCA)	Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga, Ontario, L4W2T3 (905) 624-5010

6. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts should be replaced only with the manufacturer's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.
(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
   (1) Interlock operation
   (2) Proper door closing
   (3) Seal and sealing surfaces (arcing, wear, and other damage)
   (4) Damage to or loosening of hinges and latches.
   (5) Evidence of dropping or abuse
(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.
(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

(APH/CPH)

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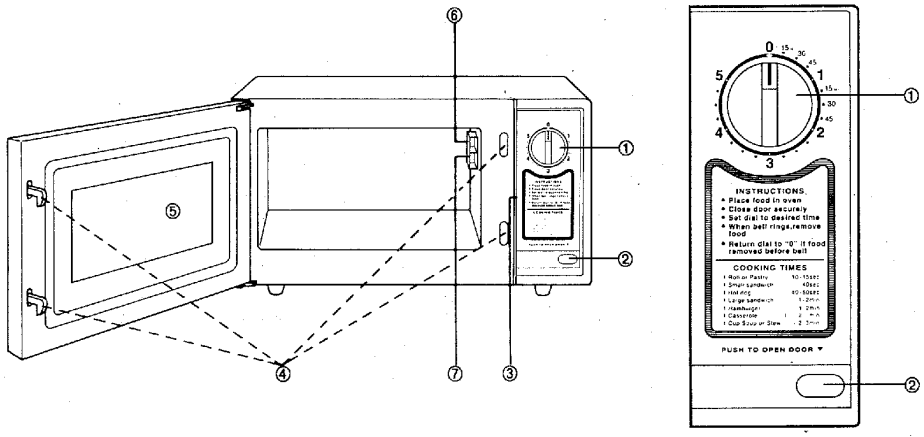
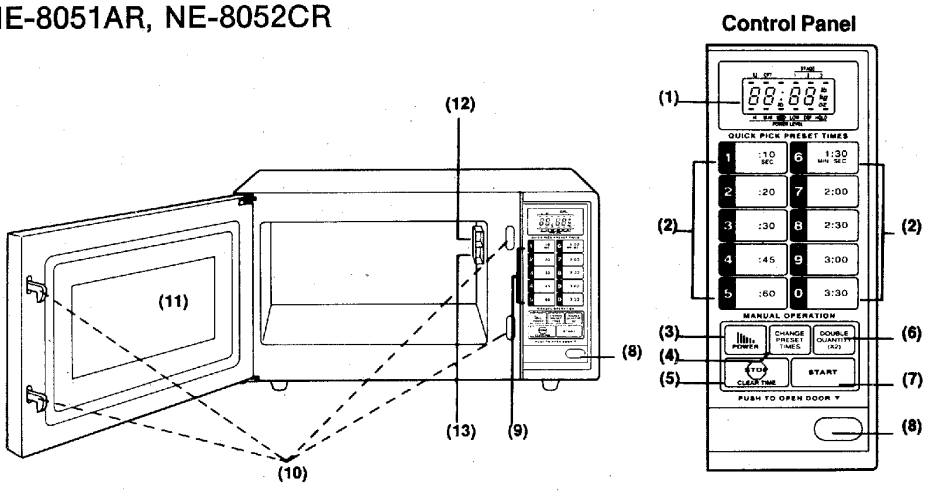
CONTROL PANEL

NE-8021AR, NE-8022CR



① Timer
② Door Release Button
③ Control Panel
④ Door Safety Lock System
⑤ Oven Window
⑥ Oven Lamp
⑦ Splash Guard/Light Diffuser

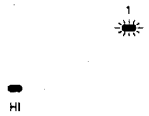
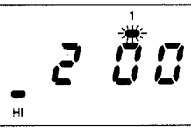
NE-8051AR, NE-8052CR



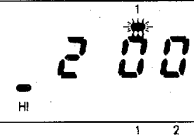
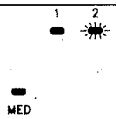
(1) Digital Display Window (see below)
(2) Memory Pads
(3) Power Level Selector Pad
(4) Change Preset Times Pad
(5) Stop/Clear Time Pad
(6) Double Quantity Pad (× 2)
(7) Start Pad
(8) Door Release Button
(9) Control Panel
(10) Door Safety Lock System
(11) Oven Window
(12) Oven Lamp
(13) Splash Guard/Light Diffuser

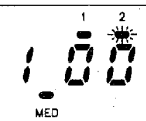
OPERATION PROCEDURE

1. Manual Heating for Single Stage

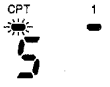
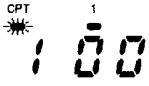
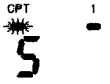
OPERATION	DISPLAY
1. Plug the power supply cord into wall receptacle.	
2. Open the door. Place a water load in the oven and close the door.	
3. Press Power pad once. (Set to HIGH power)	
4. Press 2, 0, 0 pads. (Set to 2 minutes)	
5. Press Start pad.	
6. When the time is up, you hear 5 beeps.	
7. Open the door and take out the water load.	
8. Close the door. 1 minute later, display will return blank.	

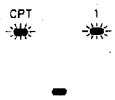
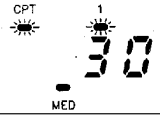
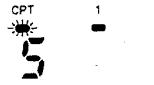
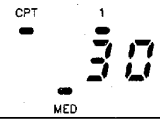
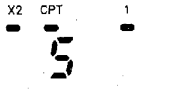
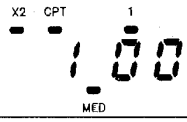
2. Manual Heating for 2nd Stage

OPERATION	DISPLAY
1. Follow step 1 to 4 for 1st stage.	
2. Press Power pad 3 times. (Set MEDIUM power)	

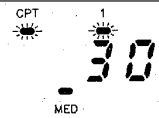
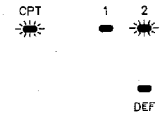
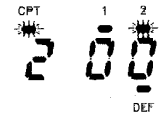
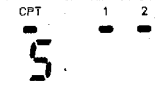
OPERATION	DISPLAY
3. Press 1, 0, 0 pads. (Set to 1 minute)	
4. Press Start pad. (1st stage)	
5. When the 1st stage time is up, you hear 1 beep sound. (2nd stage)	
6. When the time is up, you hear 5 beeps sound.	
7. Open the door and take out the water load.	
8. Close the door. 1 minute later, display will return blank.	

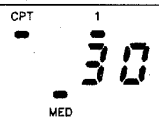
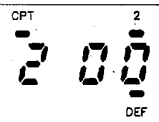
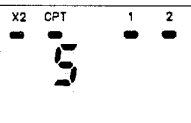
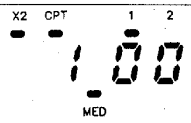
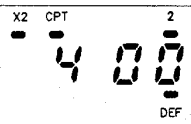
3. Memory Setting for Single Stage Operation
Oven is not program lock mode

OPERATION	DISPLAY
1. Press Change preset times pad. NOTE: Display should be blank to start programming.	
2. Press 5 pad. (Set to memory pad 5)	When memory 5 is blank
	When memory was programmed e.g. High power one minute single stage 
	
	

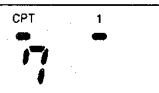
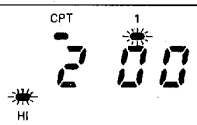
OPERATION	DISPLAY
3. Press Power pad 3 times. (Set MED power)	
4. Press 3, 0 pads. (Set 30 seconds)	
5. Press Change preset times pad.	   

4. Memory setting for 2nd stage

OPERATION	DISPLAY
1. Follow steps 1 to 4 for memory setting for single stage. (MED power, 30 seconds for 1st stage)	
2. Press Power pad 5 times. (Set defrost power for 2nd stage)	
3. Press 2, 0 and 0 pad.	
4. Press Change preset times pad.	

OPERATION	DISPLAY
This indicates double cooking time. Example: This means: If you press "5", oven will operate 30 sec-MED, 2 min-DEF. If you press "×2" and "5" oven will operate 1 min-MED, 4 min-DEF.	    

5. Memory Pad Heating

OPERATION	DISPLAY
1. Plug the power supply cord into wall receptacle.	
2. Open the door. Place a water load in the oven and close the door.	
3. Press 7 pad.	
4. Press start pad.	
5. When the time is up, you hear 5 beeps.	

OPERATION	DISPLAY
6. Open the door and take out water load.	0
7. Close the door, display will return blank after 1 minute.	

6. To Read Cycle Counter

OPERATION	DISPLAY
1. Open the door and leave it open.	0
2. While pressing Stop/Clear time pad, press Power pad. e.g. 0010 means, the oven has been used 1,000 times. 9999 means, the oven has been used 999,900 times.	00 10
3. 2 seconds later, display will return "0".	0

7. To Select Beep Tone Options (ON or OFF of Beep Tone)

OPERATION	DISPLAY
1. Open the door.	0
2. Press Change preset times pad.	0
3. Press 0 pad.	CPT 1 bE EP
4. Press 0 pad again. (No beep tone setting)	CPT 2 bE EP

OPERATION	DISPLAY
5. Press Change preset times pad.	CPT 2 bE EP
6. Display will return 0.	0

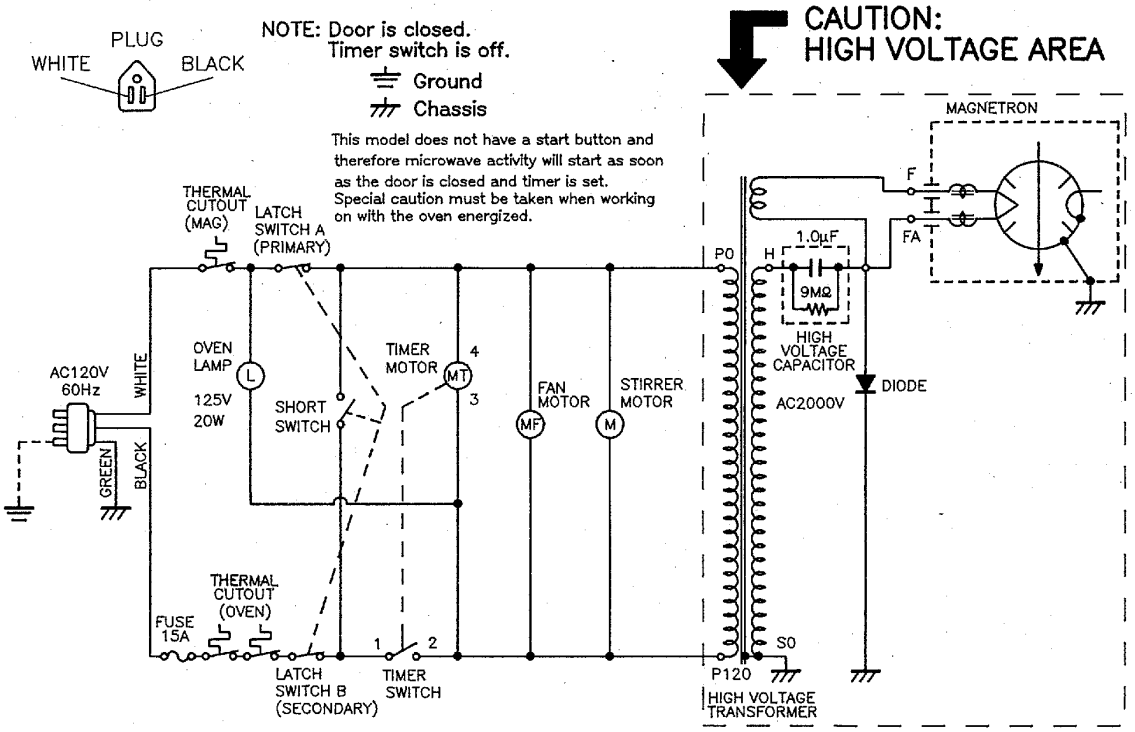
8. To Lock Program of Memory Pad

OPERATION	DISPLAY
1. Plug the power supply cord into wall receptacle. -Display must be blank—	
2. Press and hold in the Change preset times pad until the display shows "P" and "L". (Approx 6 seconds) NOTE: When oven was already "program lock mode", display will not show anything and remain blank.	CPT CPT P L

9. To Release the Memory Pad Program Lock

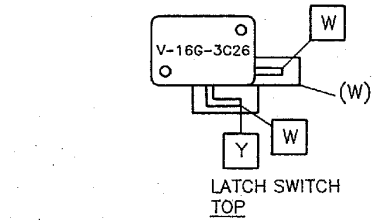
OPERATION	DISPLAY
1. Plug the power supply cord into wall receptacle. —Display must be blank—	
2. While press and hold Stop/Clear time pad and press Change preset time pad until the display shows "P". NOTE: When oven was "not program lock mode" display will not show anything and remain blank.	CPT P

SCHEMATIC DIAGRAM (NE-8021AR) (APH)

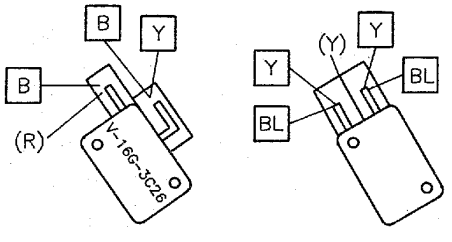


WIRING DIAGRAM

NOTE: *When replacing, check the lead wire colour as shown.
*Colours shown by ( ) indicate colours of lead wire connector housing.

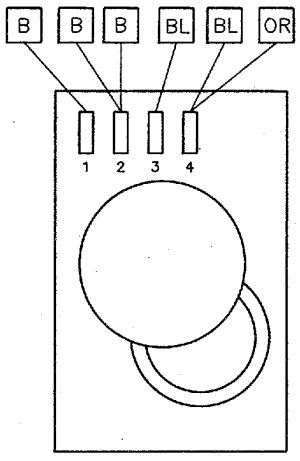


LATCH SWITCH
TOP



LATCH SWITCH
BOTTOM (OUTSIDE)

SHORT SWITCH
BOTTOM (INSIDE)



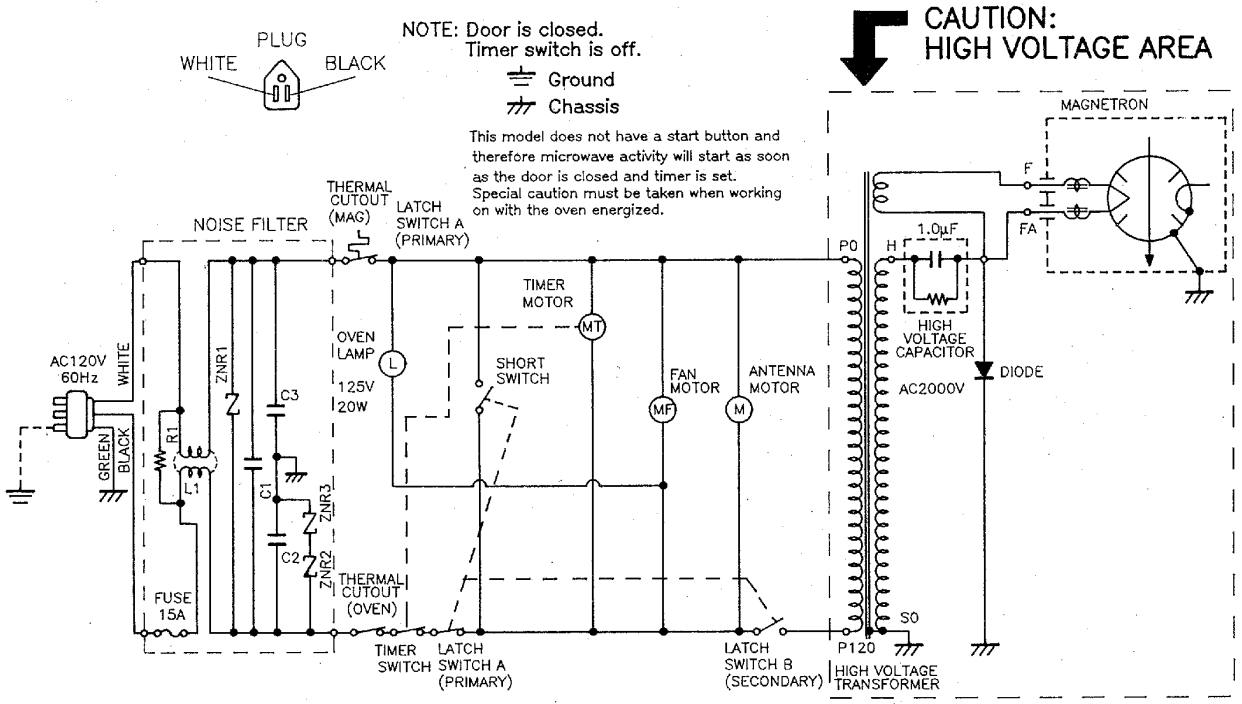
TIMER

	TERMINAL
TIMER MOTOR	3-4
TIMER SWITCH	1-2

SYMBOL	COLOUR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

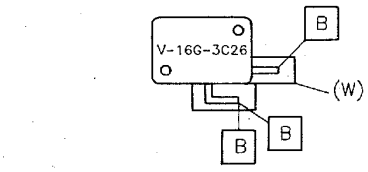
S-335 APH
87-007

SCHEMATIC DIAGRAM (NE-8022CR) (CPH)

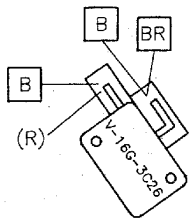


WIRING DIAGRAM

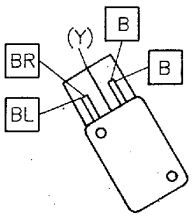
NOTE: *When replacing, check the lead wire colour as shown.
*Colours shown by ( ) indicate colours of lead wire connector housing.



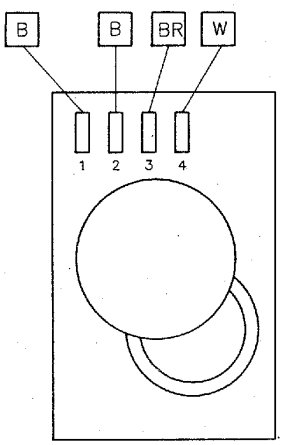
LATCH SWITCH
TOP



LATCH SWITCH
BOTTOM (OUTSIDE)



SHORT SWITCH
BOTTOM (INSIDE)



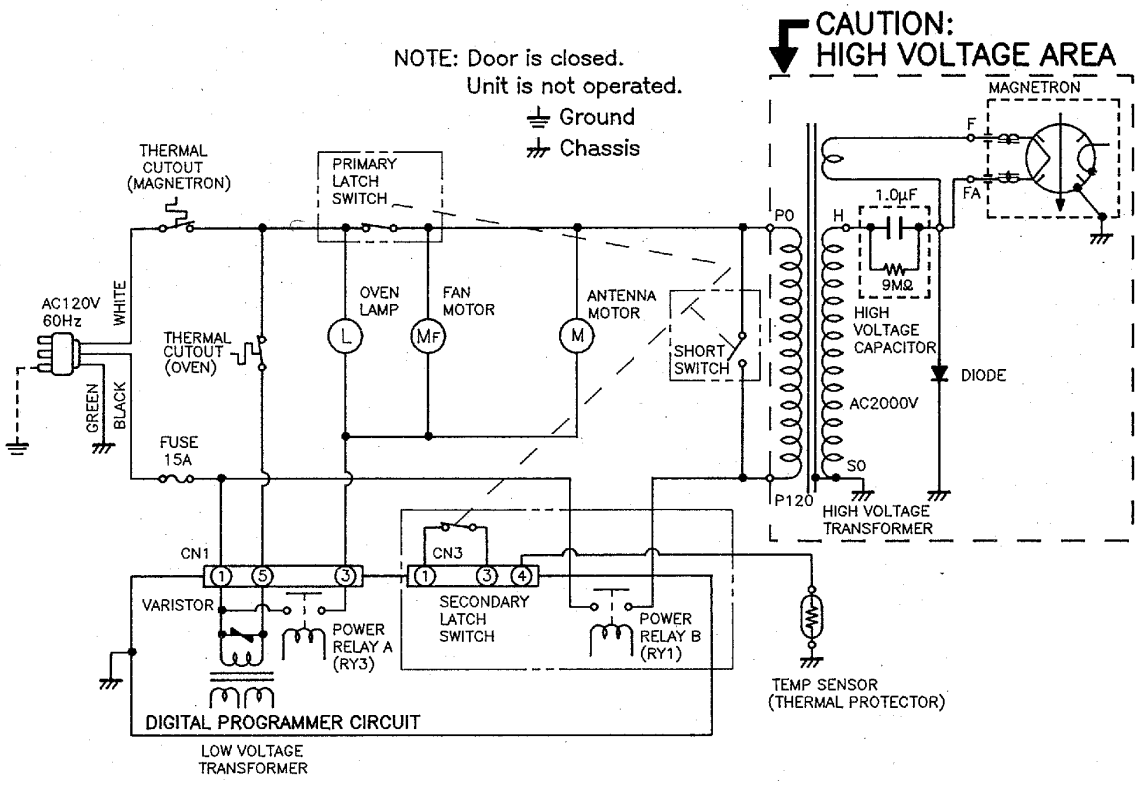
TIMER

	TERMINAL
TIMER MOTOR	3-4
TIMER SWITCH	1-2

SYMBOL	COLOUR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

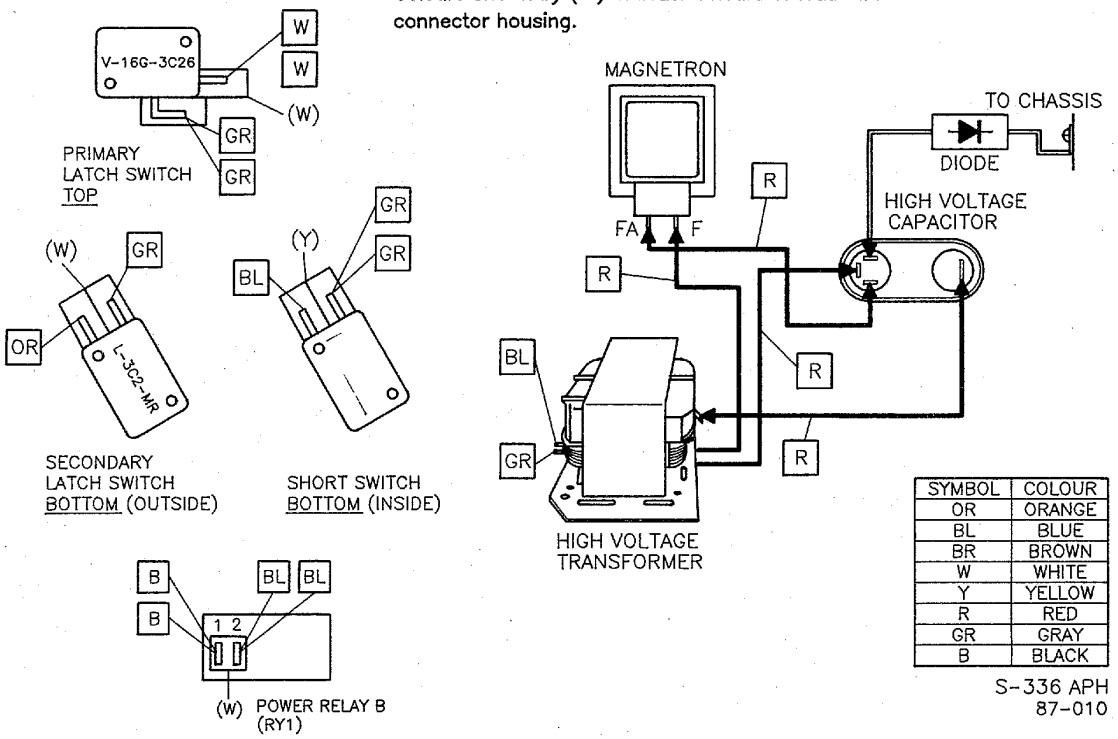
S-335 CPH
87-008

SCHEMATIC DIAGRAM (NE-8051AR) (APH)



WIRING DIAGRAM

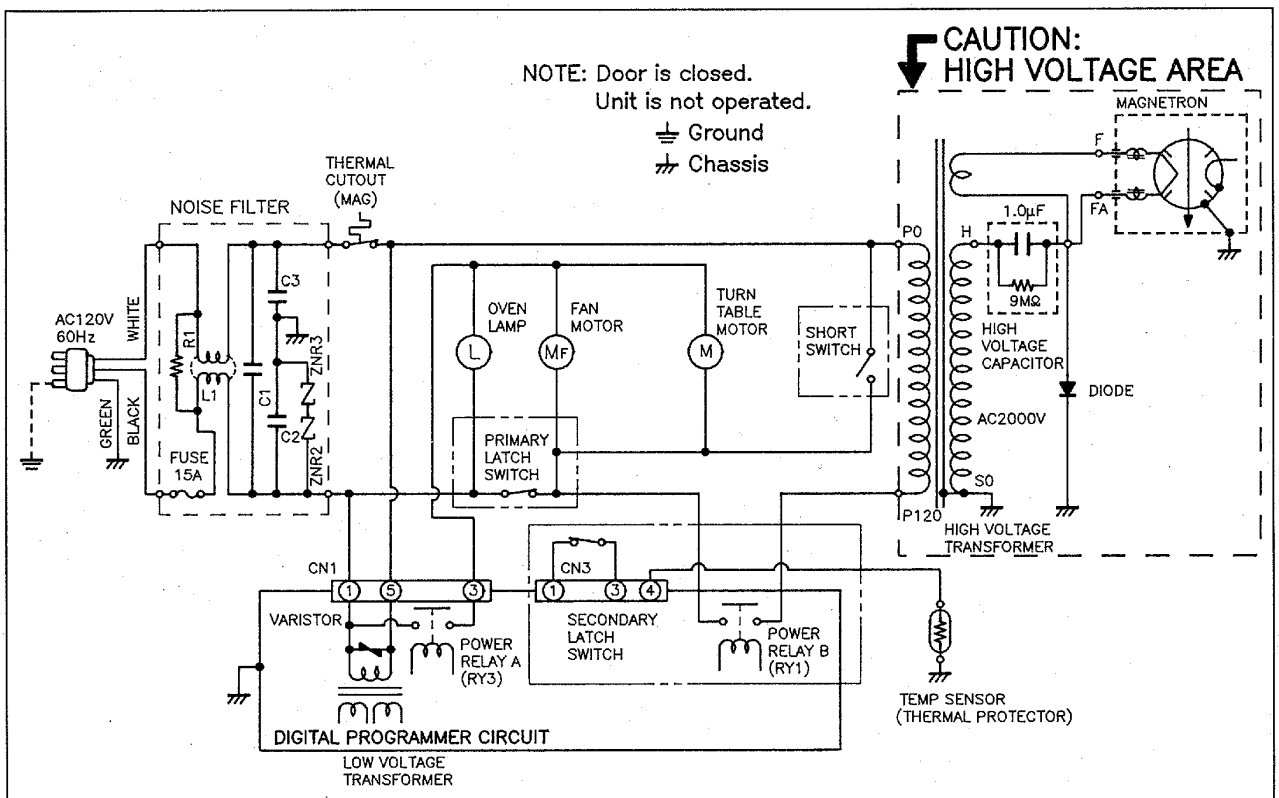
NOTE: *When replacing, check the lead wire colour as shown.
*Colours shown by ( ) indicate colours of lead wire connector housing.



SYMBOL	COLOUR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

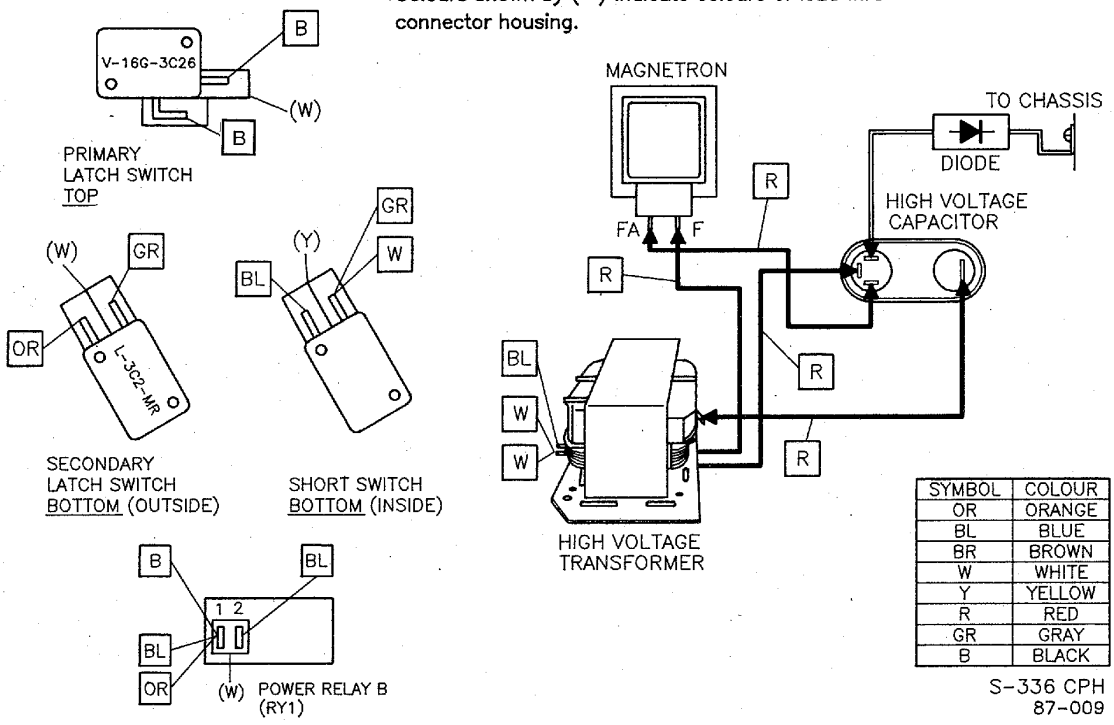
S-336 APH
87-010

SCHEMATIC DIAGRAM (NE-8052CR) (CPH)



WIRING DIAGRAM

NOTE: *When replacing, check the lead wire colour as shown.
*Colours shown by ( ) indicate colours of lead wire connector housing.



SYMBOL	COLOUR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

S-336 CPH
87-009

DESCRIPTION OF OPERATING SEQUENCE

1. Variable power cooking control (NE-8051AR/8052CR)

The coil of power relay B (RY1) is energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of power relay B contacts in order to vary the output power of the microwave oven from "Low" to "High" power. One complete ON and OFF cycle of power relay B is 22 seconds.
The relation between indications on the control panel and the output of the microwave oven is as shown in table.

NOTE: The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.

POWER SETTING	※OUTPUT POWER(W) APPROX.	ON-OFF TIME OF POWER RELAY B (RY1)	
		ON(SEC)	OFF(SEC)
HIGH	800	22	0
MEDIUM-HIGH	618	17	5
MEDIUM	400	11	11
LOW	291	8	14
DEFROST	145	Cyclic Defrost	

※IEC-705-88 test procedure.
Specifications subject to change without notice.

2. Cyclic defrost (NE-8051AR/8052CR)

When defrost power and defrosting time is selected and Start pad is touched:

(A) The digital programmer circuit (DPC) divides the total defrosting time into 8 equal periods, consisting of four defrosting periods, each followed by a standing period.

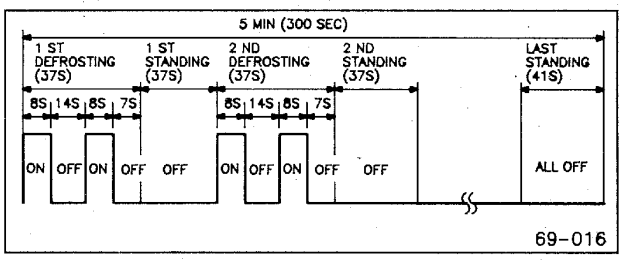
(B) During defrosting power periods, power relay B is energized for 8 seconds and de-energized for 14 seconds by DPC.

(C) During Standing periods, power relay B is always open resulting in no microwave power.

NOTE: Defrost time selected is converted into seconds by the DPC but display will show selected time in minutes and seconds as programmed. The total number of seconds is divided into 8 time periods. The remainder (seconds not equally divisible by 8) are added to the last standing time period.

Example : If Defrosting time is selected for 5 minutes, each operating period will be as follows : (See **Figure.**)
5 minutes = 300 seconds
300/8 = 37 and remainder is 4 seconds.
The 4 seconds is added to the last time period.

NOTE: When defrosting time is selected for not more than 7 seconds, the power relay B will not be energized at all.


5 MIN (300 SEC)
1 ST DEFROSTING (37S)
1 ST STANDING (37S)
2 ND DEFROSTING (37S)
2 ND STANDING (37S)
LAST STANDING (41S)
8S 14S 8S 7S
8S 14S 8S 7S
ON OFF ON OFF OFF ON OFF ON OFF OFF
ALL OFF
69-016

CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

2. Warning about the electric charge in the high voltage capacitor

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitor.
When replacing or checking parts, remove the power plug from the outlet and short the terminal of the high voltage capacitor (terminal of lead wire from diode) to chassis ground with an insulated handle screwdriver to assure discharge.

WARNING

There is high-voltage present, with high-current capabilities in the circuits of the high voltage winding and filament winding of the high voltage transformer. It is extremely dangerous to work on or near these circuits with oven energized.
DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

WARNING

Never touch any circuit wiring with your hand nor with an insulated tool during operation.

3. When parts must be replaced, remove the power plug from the outlet.

4. When the 15 Amp fuse is blown due to the operation of short switch:

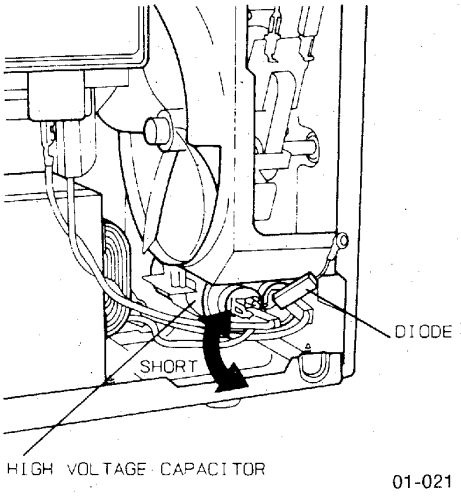
WARNING

When the 15 Amp. fuse is blown due to the operation of short switch, you must replace Primary latch switch and short switch. Also check continuity of the power relay B (RY-1) and the secondary latch switch, and replace if there is a shorted contacts.

(A) This is mandatory. Refer to "Adjustments and Measurement" for these switches.
(B) When replacing the fuse, confirm that it has the appropriate rating for these models.
(C) When replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.

5. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.



01-021

Touch chassis side first then short to the high voltage capacitor terminal.

6. Confirm after repair

(A) After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing.
Microwaves might leak if screws are not properly tightened.
(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
(C) Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage.)

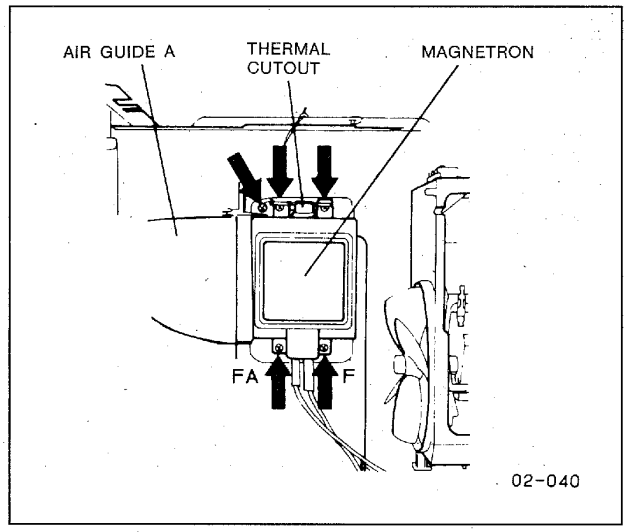
DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

1. Magnetron

(A) Discharge the high voltage capacitor.
(B) Remove 2 screws holding magnetron thermal cutout.
(C) Remove 1 screw holding air guide A.
(D) Disconnect 2 high voltage lead wires from magnetron filament terminals.
(E) Remove 4 screws holding the magnetron.
NOTE: After replacement of the magnetron, tighten mounting screws properly making sure there is no gap between the waveguide and the magnetron to prevent microwave leakage.

CAUTION
When replacing the magnetron, be sure the antenna gasket is in place.

CAUTION
When connecting 2 filament lead wires to the magnetron terminals, be sure to connect the lead wires in the correct position. The lead wire of high voltage transformer should be connected to "F terminal" and the lead wire from high voltage capacitor should be connected to "FA terminal".

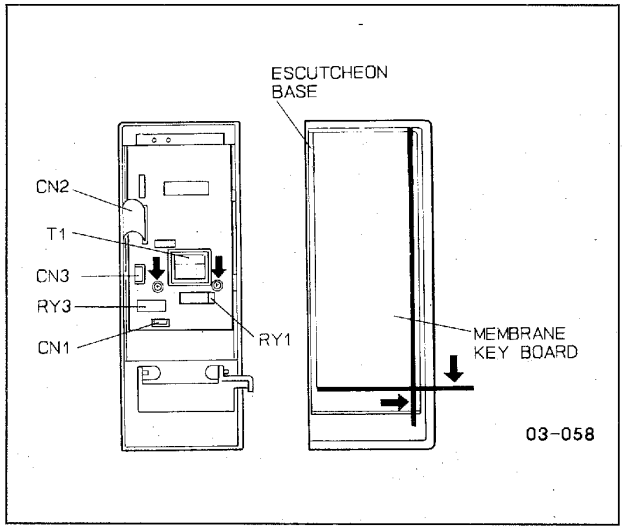


2. Digital programmer circuit (DPC) and membrane key board.

NOTE: Be sure to ground any static electric charge built up on your body, before handling the DPC.
(A) Disconnect all connectors from D.P.C.
(B) Remove 1 screw holding escutcheon base and slide the escutcheon base upward slightly.
(C) Release CN2 connector's lock of DPC by pushing both levers to inside and pull them upward, and remove flat cable of membrane key board.
(D) Remove 2 screws holding DPC.

To replace membrane key board

(E) Remove escutcheon bracket from escutcheon base by freeing 4 catch hooks on the escutcheon base.
(F) Peel off membrane key board from escutcheon base.
(G) Peel off display filter from escutcheon base.
(H) Push the upper part of key board (display window portion) from back of escutcheon base and peel off membrane key board completely from escutcheon base.
NOTE 1. The membrane key board is attached to the escutcheon base with double faced adhesive tape.
2. When installing new membrane key board, make sure that the surface of escutcheon base is cleaned sufficiently so that any problems (shorted contacts or uneven surface) can be avoided.
3. Make sure that new membrane key board is aligned to the right and lower edges of the escutcheon base. (see figure)

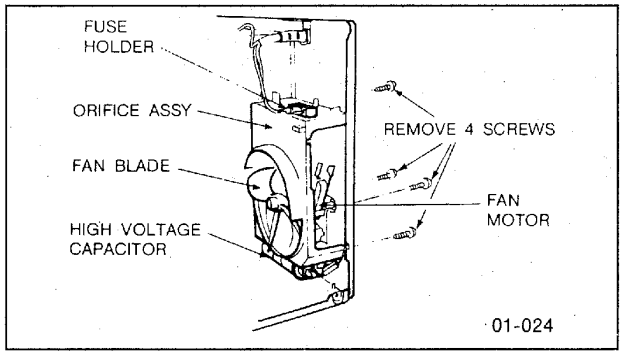


3. Low voltage transformer and/or power relays (RY1, RY3)

NOTE: Be sure to ground any static electric charge built up on your body before handling the DPC.
(A) Using solder wick or a desoldering tool and 30W soldering iron, carefully remove all solder from the terminal pins of the low voltage transformer and/or power relays.
NOTE: Do not use a soldering iron or desoldering tool of more than 30 watts on DPC contacts.
(B) With all the terminal pins cleaned and separated from DPC contacts, remove the defective transformer/power relays and install new transformer/power relays making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.

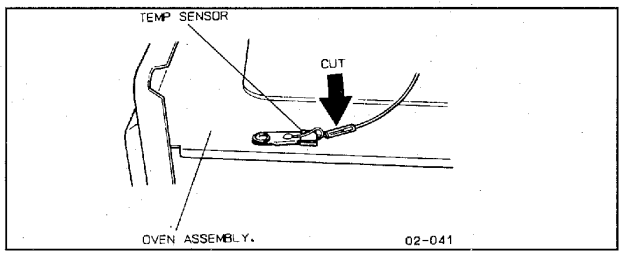
4. Fan motor.

(A) Disconnect 2 lead wires from fan motor terminals.
(B) Disconnect 2 lead wires from fuse holder terminals.
(C) Disconnect 4 high voltage lead wires from high voltage capacitor terminals.
(D) Remove 4 screws holding fan motor and orifice assy and detach the orifice assy with fan motor from oven assy.
(E) Remove fan blade from the fan motor shaft by pulling it straight out.
(F) Separate the fan motor from the orifice assy by freeing 2 catch hooks on the orifice assy.



5. Temp sensor (thermal protector) NE-8051

(A) Cut a lead wire at the top of sensor terminals.
(B) Remove 1 screw holding the temp sensor and replace with new one.
(C) Solder the lead wires securely to the sensor terminals.

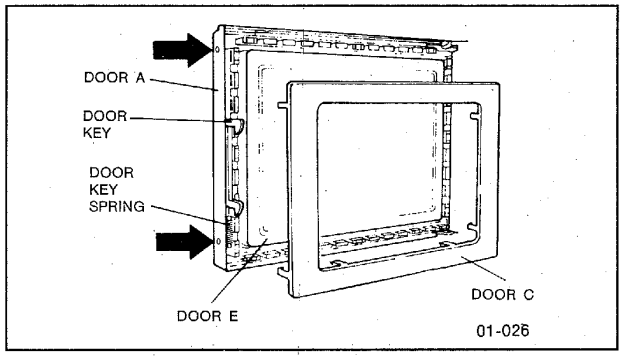


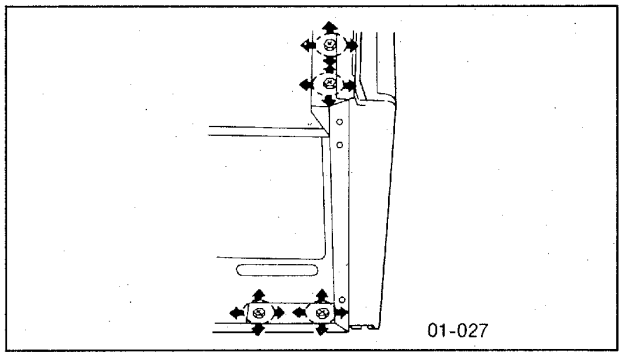
6. Door assembly

(A) Open the door and remove door C from door E by carefully pulling outward starting from upper right hand corner.
(B) Remove door key and door key spring.
(C) Remove 2 screws holding side frame of door A.
(D) Separate the door A from the door E by freeing catch hooks on the door A using a flat screwdriver.

After replacement of the defective component parts of the door, reassemble it and follow the instructions below for proper installation and adjustment so as to prevent an excessive microwave leakage.

(1) When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment.
(2) Adjust so that the door has no play between the inner door surface and oven front surface. If the door assembly is not mounted properly microwave energy may leak from the clearance between the doo and oven.
(3) Perform the microwave leakage test.





7. Stirrer motor

(A) Remove 6 screws holding motor cover.
(B) Disconnect 2 lead wires from stirrer motor.
(C) Remove 2 screws holding stirrer motor.

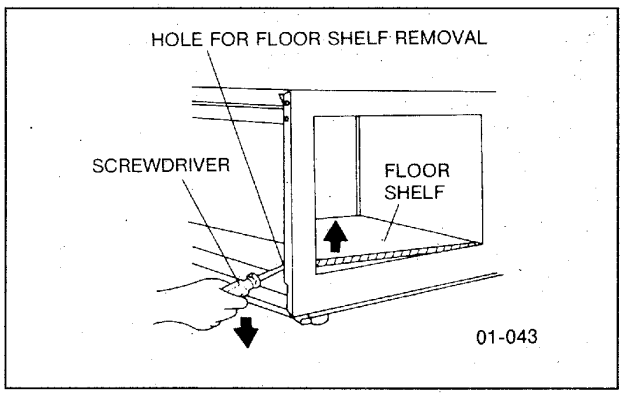
8. Floor shelf and/or moving antenna

(A) Insert a phillips type screwdriver or equivalent approx. 2" (5cm) in shaft length in the hole in the left side oven wall as shown in Figure.
(B) Carefully lift up the floor shelf by prying up with the screwdriver until the floor shelf is lifted up over the level of oven front opening.
(C) Remove the floor shelf by lifting it out through the oven front.

To replace moving antenna.

(D) Remove the moving antenna by simply lifting it up off the stirrer motor shaft.

NOTE: When replacing the moving antenna, make sure the plastic stirrer spacers are correctly in place. They are necessary to stabilize the antenna by gliding around the oven bottom as the antenna turns.



COMPONENT TEST PROCEDURE

CAUTION

1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitor.

1. Primary Latch Switch, Secondary (Secondary Latch Switch and Power relay B) Interlocks.

(A) Unplug lead connectors to Power Relay B and verify continuity of the power relay B 1-2 terminals.
(B) Unplug lead connectors to Primary Latch Switch and Secondary Latch Switch.
(C) Test the continuity of switches at door opened and closed positions with ohm meter (low scale).
Normal continuity readings should be as follows.

	Door Opened	Door Closed
Primary Latch Switch	∞ Ω (open)	0 Ω (close)
Secondary Latch Switch	∞ Ω (open)	0 Ω (close)
Power Relay B	∞ Ω (open)	∞ Ω (open)

2. Short Switch & Monitor Circuit

(A) Unplug lead wires from H.V. transformer primary terminals.
(B) Connect test probes of ohm meter to the disconnected leads which were connected to H.V. Transformer.
(C) Test the continuity of short switch with door opened and closed positions using lowest scale of the ohm meter.
Normal continuity readings should be as follows.

Models	Door closed	Door opened
Touch Models	∞ Ω	0 Ω
Mechanical Models	Some Ohm See Note	0 Ω

NOTE: In this case, the ohm meter indicates some resistance of the part(s) such as oven lamp, blower fan motor, etc. connected in parallel with the monitor circuit.

3. High voltage transformer

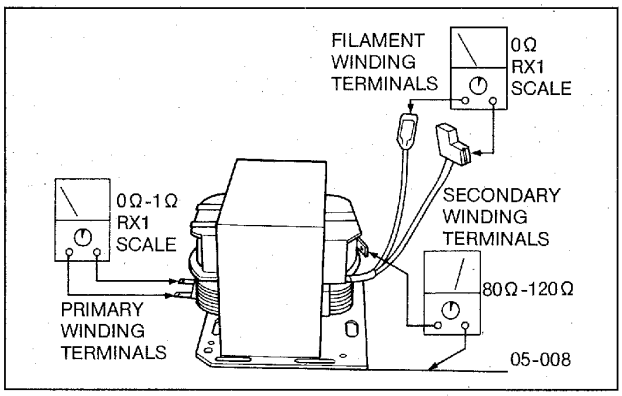
(A) Remove connections from the transformer terminals and check continuity.
(B) Normal (cold) resistance readings should be as follows:
Secondary winding ····· Approx. 80Ω~120Ω
Filament winding ····· Approx. 0Ω
Primary winding ····· Approx. 0Ω~ 1Ω

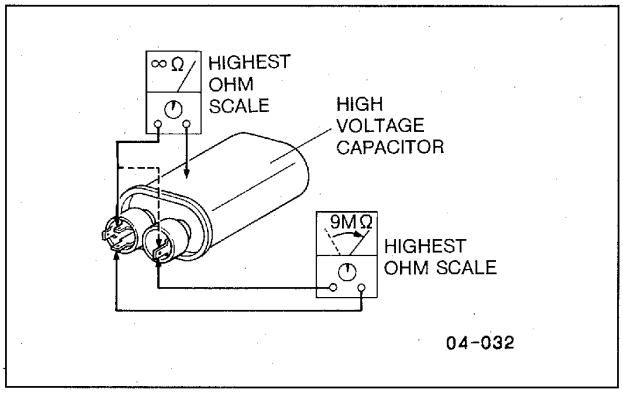
4. High voltage capacitor

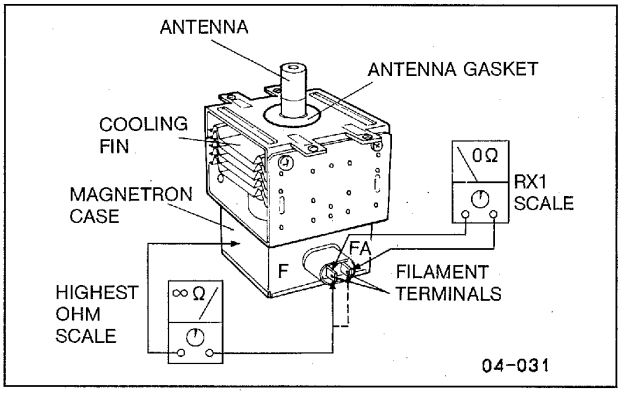
(A) Check continuity of capacitor with meter on highest OHM scale.
(B) A normal capacitor will show continuity for a short time, and then indicate 9MΩ once the capacitor is charged.
(C) A shorted capacitor will show continuous continuity.
(D) An open capacitor will show constant 9MΩ.
(E) Resistance between each terminal and chassis should be infinite.

5. Magnetron

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.
(A) Isolate magnetron from the circuit by disconnecting the leads.
(B) A continuity check across magnetron filament terminals should indicate one ohm or less.
(C) A continuity check between each filament terminal and magnetron case should read open.







6. Diode

(A) Isolate the diode from the circuit by disconnecting the leads.
(B) With the ohmmeter set on the highest resistance scale, measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions.
A normal diode's resistance will be infinite in one direction and several hundred kΩ in the other direction.

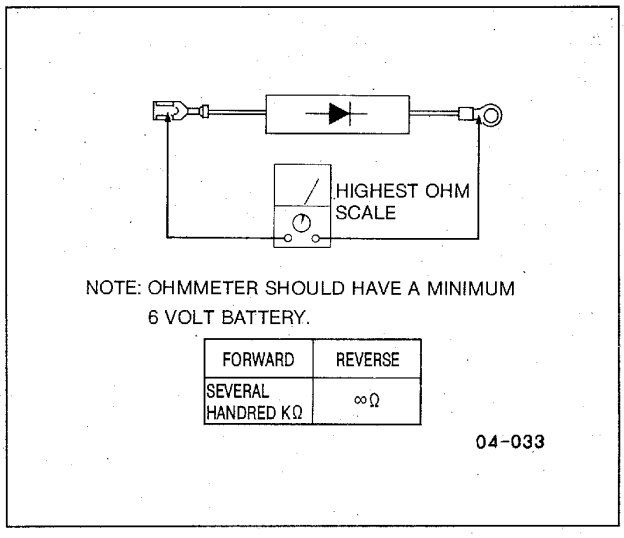
7. Membrane key board (Membrane switch assembly)

Check continuity between switch terminals, by tapping an appropriate pad on the key board. The contacts assignment of the respective pads on the key board is as shown in digital programmer circuit.

8. Temp sensor (Thermal protector)

A temp sensor is mounted or top of the oven cavity at the left side. Its purpose is to automatically shut off the oven in case the cavity overheats for any reason.
The thermal protector will operate at 257°F (125°C).
The device is connected to the DPC on touch control models. When the thermal protector exceeds its temperature it will turn off power to the oven cavity and display will go to reset mode.
The cooking program can be reset after cool-down.

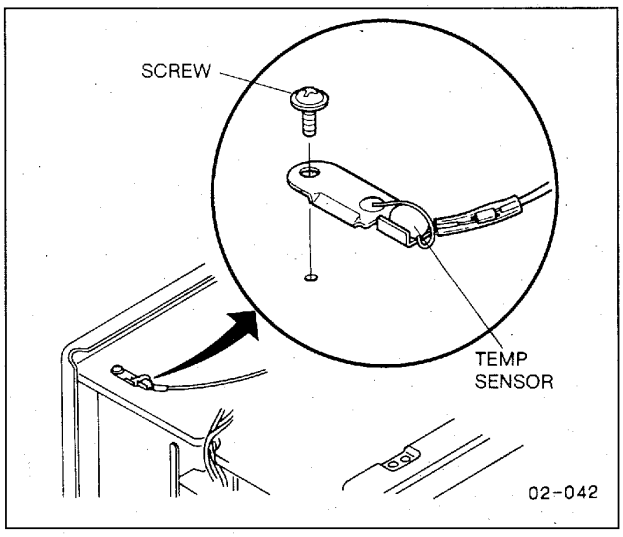
THERMISTOR RESISTANCE VALUE
30K-120K at 10°C-30°C (50°F-86°F)



NOTE: OHMMETER SHOULD HAVE A MINIMUM 6 VOLT BATTERY.

FORWARD	REVERSE
SEVERAL HANDRED KΩ	∞Ω

04-033



02-042

MEASUREMENTS AND ADJUSTMENTS

WARNING

* For continued protection against radiation hazard, replace only with identical replacement parts as listed below.

SW'S	MODEL	NE-8051AR NE-8052CR	NE-8021AR NE-8022CR
Primary latch switch	Part No.	ANE61424L0AG	ANE61424L0AG
	Type No.	V-16G-3C26	V-16G-3C26
Secondary latch switch	Part No.	A61424650AP	ANE61424L0AG
	Type No.	L-3C2-MR	V-16G-3C26
Short switch	Part No.	ANE61784L0AG	ANE61784L0AG
	Type No.	V-16G-2C25	V-16G-2C25

* When the 15 Amp. fuse is blown due to the operation of short switch, you must replace following parts together.

	NE-8051AR NE-8052CR	NE-8021AR NE-8022CR
Primary latch switch	Replace	Replace
Secondary latch switch	Check continuity and replace if there is a shorted contacts	Replace
Short switch	Replace	Replace
Power relay B Part No. AEG5J1EG18 Type No. G5J-1-TP	Check continuity and replace if there is a shorted contacts (Terminals 1-2)	———

Then follow the adjustment procedures as shown below.

* Interlock switch replacement—In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.
* Refer to schematic diagram to ensure proper connection.

1. Adjustment of Primary latch switch, Secondary latch switch and short switch

(A) When mounting Primary latch switch, Secondary latch switch and short switch to door hook assembly, mount the Primary latch switch, the Secondary latch switch and the short switch to the door hook assembly as shown in Figure.

NOTE: **No specific adjustment during installation of Primary latch switch, Secondary latch switch and short switch to the door hook is necessary.**

(B) When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of arrow in table so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.

(C) Reconnect the short switch and check the continuity of the monitor circuit and all latch switches again by following the components test procedures.

2. Measurement of microwave output

The power output of the magnetron can be determined by performing a simple water heating test as described below.

Necessary Equipment:

*1 liter beaker *Glass thermometer

*Wrist watch or stopwatch

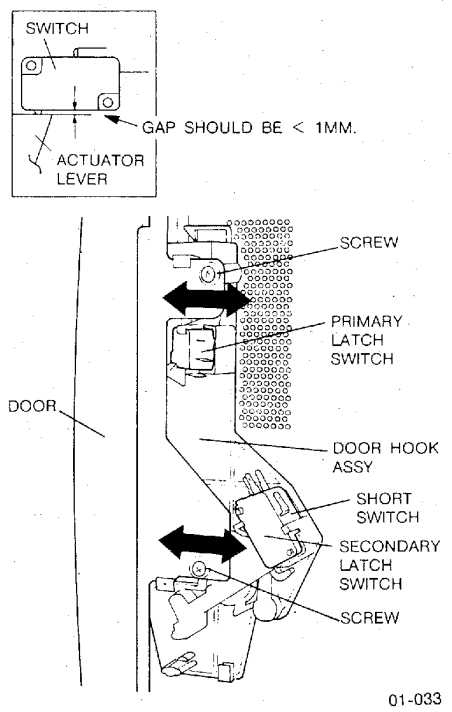
NOTE: **Check the line voltage under load. Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurate as possible.**

(A) Fill the beaker with exactly one liter of tap water. Stir the water using the thermometer and record each beaker's temperature (recorded as T1).

(B) Place the beaker on the center of glass cook plate.
Set the oven for High power and heat it for exactly one minute.

(C) Stir the water again and read the temperature of the beaker (recorded as T2).

(D) The normal temperature rise at High power position for each model is as shown in table.



Please confirm that the gap between the switch housing and switch actuator levers is no more than 1.0mm when the door is closed.

TABLE (1 ℓ -1min. test)

RATED OUTPUT	TEMPERATURE RISE
800W (IEC705-88)	Min. 12.6°F (7.0°C)

PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

WARNING

Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm² (1mW/cm² for Canada) inform the MSC, PSC, or MELCA immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S and Health and Welfare Canada regulation. This required must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE: The U.S. government standard is 5 mW/cm² while in the customer's home. 2mW/cm² stated here is our own voluntary standard. (1mW/cm² for Canada)

1. Equipment

*Electromagnetic radiation monitor
*Glass thermometer 212°F or 100°C
*600cc glass beaker

2. Procedure for measuring radiation leakage.

Note before measuring

(1) Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.
(2) To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area shown in Figure no faster than 1 inch/sec (2.5 cm/sec)
(3) Leakage with the outer panel removed·····less than 5mW/cm²
(4) Leakage for a fully assembled oven with door normally closed····· less than 2mW/cm² (1mW/cm² for Canada)
(5) Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while pulling the door ·····less than 2mW/cm²

(A) Pour 275 ± 15cc (9ozs ± 1/2oz) of 20 ±5°C (68 ± 9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
(B) Set the radiation monitor to 2450MHz and use it following the manufacturer's recommended test procedure to assure correct results.
(C) When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.
(D) Tap the start pad or set the timer and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

(1) Measurement with the outer panel removed.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron.

WARNING

Avoid contacting any high voltage parts.

(2) Measurements with a fully assembled oven.

After all components, including the outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.

3. Record keeping and notification after measurement

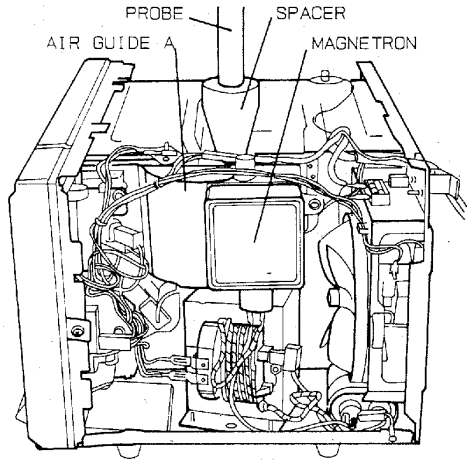
(A) After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.
A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.

(B) Should the radiation leakage be more than 2 mW/cm² (1mW/cm² for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify the MSC, PSC or MELCA.

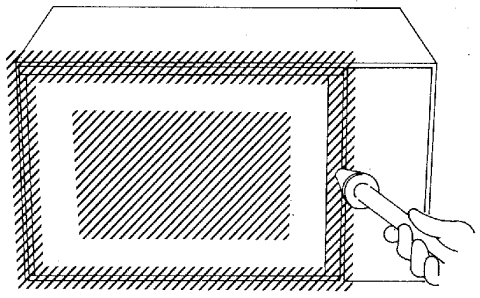
4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.

WARNING

AVOID CONTACTING ANY HIGH VOLTAGE PARTS.



01-034



01-035

MOVE PROBE ALONG SHADED AREA (////) AROUND EXHAUST OPENINGS (as shown) AND AROUND AIR INLET OPENING

(APH/CPH)

TROUBLESHOOTING GUIDE (NE-8021AR/8022CR)

CAUTION

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge the high voltage capacitor.
4. When checking the continuity of the switches or the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
   When disconnecting a plastic connector from a terminal, you must hold the plastic connector instead of the lead wire and then disconnect it, otherwise lead wire may be open or the connector cannot by removed.

[TROUBLE 1] Oven does not start cooking

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
Oven is dead	1	Fuse	Blown	→ TROUBLE 2
			Normal	→ STEP 2
	2	Magnetron thermal cutout	Faulty (open)	Thermal cutout ※ Check fan motor when thermal cutout is defective
			Normal	→ STEP 3
	3	Oven thermal cutout	Faulty (open)	Thermal cutout
			Normal	→ STEP 4
	4	Secondary latch switch	Abnormal	Secondary latch switch
			Normal	Timer Loose lead wire
Oven lamp operates normally but fan motor does not rotates	1	Primary latch switch	Abnormal	Primary latch switch
			Normal	Fan motor Loose lead wire
Oven lamp and fan motor rotates normally but no microwave oscillation	1	Check high voltage component according to component test procedure H.V.Transformer H.V.Capacitor H.V.Diode Magnetron	Faulty	Replace faulty H.V.Component Loose lead wire

[TROUBLE 2] Fuse is blown

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
Main fuse blown	1	Primary & secondary latch switch (Door closed 0 Ω Door opened ∞ Ω)	Abnormal	Replace primary latch switch, secondary latch switch & short switch together
			Normal	→ STEP 2
	2	Short switch (Door closed ∞ Ω Door opened 0 Ω)	Abnormal	Replace primary latch switch, secondary latch switch & short switch together
			Normal	→ STEP 3
	3	Check high voltage component according to component test procedure H.V.Capacitor H.V.Transformer	Faulty	Replace faulty H.V.Component
	※NOTE: All these switches must be replaced at same time. (Refer to adjustment instructions.)			

[TROUBLE 3] Other troubles

CONDITIONS	POSSIBLE CAUSE	NOTE
Microwave output power is low. First of all, check if output power is really low by following "Measurement of microwave output" on page 18.	1. Decrease in power source voltage. 2. Aging change of magnetron.	

TROUBLESHOOTING GUIDE (NE-8051AR/8052CR)

CAUTION

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge high voltage capacitor.
4. When checking the continuity of the switches or the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
   When disconnecting a plastic connector from a terminal, you must hold the plastic connector instead of the lead wire and then disconnect it, otherwise lead wire may be open or the connector cannot by removed.
5. Do not touch any parts of the circuitry on the digital programmer circuit, since static electric discharge may damage this control panel.
   Always touch yourself to ground while working on this panel to discharge any static charge in your body.
6. A 120V AC is present at the shaded area ▒▒ of the digital programmer circuit (Terminals of power relay B and primary circuit of low voltage transformer). When troubleshooting, be cautious of possible electrical shock hazard.

First of all operate the microwave oven following the correct operating procedures in order to find the exact cause of any trouble.

[TROUBLE 1] Oven does not start cooking

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
Oven is dead. No display at all	1	Fuse	Blown	→ TROUBLE 2
			Normal	→ STEP 2
	2	Thermal cutout	Faulty (open)	Thermal cutout ※ Check fan motor when thermal cutout is defective
			Normal	→ TROUBLE 4
Display lit but timer not starts count down	1	Secondary latch switch (Door closed 0 Ω (Door opened ∞ Ω)	Faulty	Secondary latch switch
			Normal	→ TROUBLE 4 Loose lead wire
Timer starts count down but no microwave oscillation	1	Primary latch switch (Door closed 0 Ω (Door opened ∞ Ω)	Faulty	Primary latch switch
			Normal	→ STEP 2
	2	High voltage transformer primary voltage	No voltage applied	→ STEP 3
			Power supply voltage applied	→ STEP 4
	3	Is 18 (12)V DC applied to power relay B?	No voltage applied	→ TROUBLE 4
			Voltage applied	Power relay B
	4	Check high voltage component according to component test procedure H.V.Transformer H.V.Capacitor H.V.Diode Magnetron	Faulty	Replace faulty H.V.Component Loose lead wire

[TROUBLE 2] Fuse is blown

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
Main fuse blown	1	Primary latch switch Secondary latch switch (Door closed 0 Ω Door opened ∞ Ω) and also power relay B (RY 1), when power relay B is located within monitor circuit.	Abnormal	Primary latch switch & short switch (※NOTE)
			Normal	→ STEP 2
	2	Short switch (Door closed 0 Ω Door opened ∞ Ω)	Abnormal	Primary latch switch & Short switch (※NOTE)
			Normal	→ STEP 3
	3	H.V.Capacitor	Faulty	H.V.Capacitor
			Normal	→ STEP 4
	※NOTE: All these switches must be replaced at same time. (Refer to adjustment instructions.) Check continuity of power relay B's contacts (between 1 and 2) and the secondary latch switch, and replace if there is a shorted contacts.			

[TROUBLE 3] Other troubles

CONDITIONS	POSSIBLE CAUSE	NOTE
Microwave output power is low. First of all, check if output power is really low by following "Measurement of microwave output".	1. Decrease in power source voltage. 2. Aging change of magnetron.	
Oven lamp and fan motor turn on when door is open.	1. Shorted contacts of Primary latch switch.	
Oven lamp and fan motor turn on when power supply cord is plugged into wall receptacle.	1. Open Secondary latch switch. 2. Shorted contacts of power relay A. (RY3) 3. Defective digital programmer circuit. (See trouble 4)	
"F33" appears in display window.	1. Open temp. sensor. 2. Defective D.P.C.	
"F34" appears in display window.	1. Short temp. sensor. 2. Defective D.P.C.	
"F01" appears in display window and oven beeps.	1. Food is overcooked and oven exhaust temperature too high.	

[TROUBLE 4] Trouble related to Digital programmer circuit

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No Display when oven is first plugged in	1	Low voltage transformer (LVT) secondary voltage	Abnormal 0V	LVT
			Normal	→ Step 2
	2	IC-1 pin 64 voltage (Emitter of Q1)	Abnormal	ZD1,Q1
			Normal = 5V	→ Step 3
	3	IC-1 pin 27 voltage (14 pin of IC-2)	Abnormal	IC-2
			Normal ≒ 5V	→ IC-1, CX1, DISPLAY
No key input	1	Membrane switch continuity	Abnormal	Membrane switch
			Normal	IC-1

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No beep sound	1	IC-1 pin 23 voltage	Abnormal	IC-1
			Normal	BZ, Q3, Q4, Q8, Q9
Power relay A (RY-3) does not turn on even though the program has been set and the start pad is tapped	1	IC-1 pin 12 voltage while operation	Abnormal	IC-1
			Normal ≒ 5V	→ Step 2
	2	short circuit between pin 1 and pin 12 of IC-2	Still not turn on	RY-3
			RY-2 turns on	IC-2
No microwave oscillation at any power setting	1	IC-1 pin 10 and pin 20 voltages while operation at high power	Abnormal	IC-1
			Normal ≒ 5V	→ Step 2
	2	Q7 transistor	Abnormal	Q4
			Normal	IC-2, RY-1
Dark or unclear display	1	Replace display and check operation	Normal	DISPLAY
			Abnormal	IC-1
Missing or lighting of unnecessary segment	1	Replace IC-1 and check operation	Normal	IC-1
			Abnormal	DISPLAY

HOW TO CHECK THE SEMICONDUCTORS USING AN OHM METER

Diode

	FORWARD	REVERSE
A-K	SMALL	∞

Transistor

NPN Transistor

2SC·····

2SD·····

	FORWARD	REVERSE
B-E	SMALL	∞
B-C	SMALL	∞
C-E	∞	∞

PNP Transistor

2SA·····

2SB·····

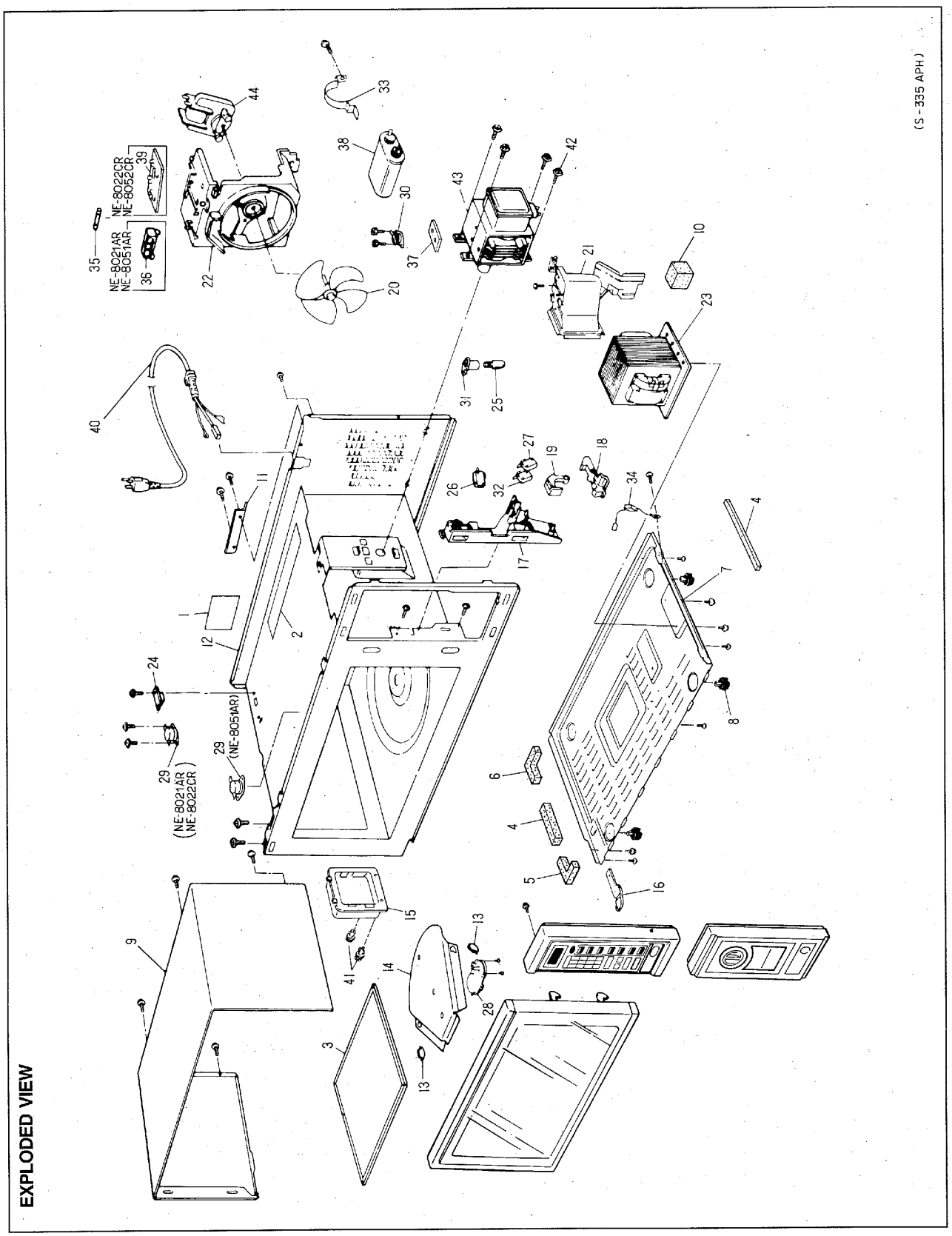
	FORWARD	REVERSE
E-B	SMALL	∞
C-B	SMALL	∞
C-E	∞	∞

Digital Transistor

PNP Transistor

	FORWARD	REVERSE
E-B	10kΩ~30kΩ	10kΩ~30kΩ
C-B	50kΩ~90kΩ	∞
C-E	40kΩ~80kΩ	∞

EXPLODED VIEW AND PARTS LIST



PARTS LIST

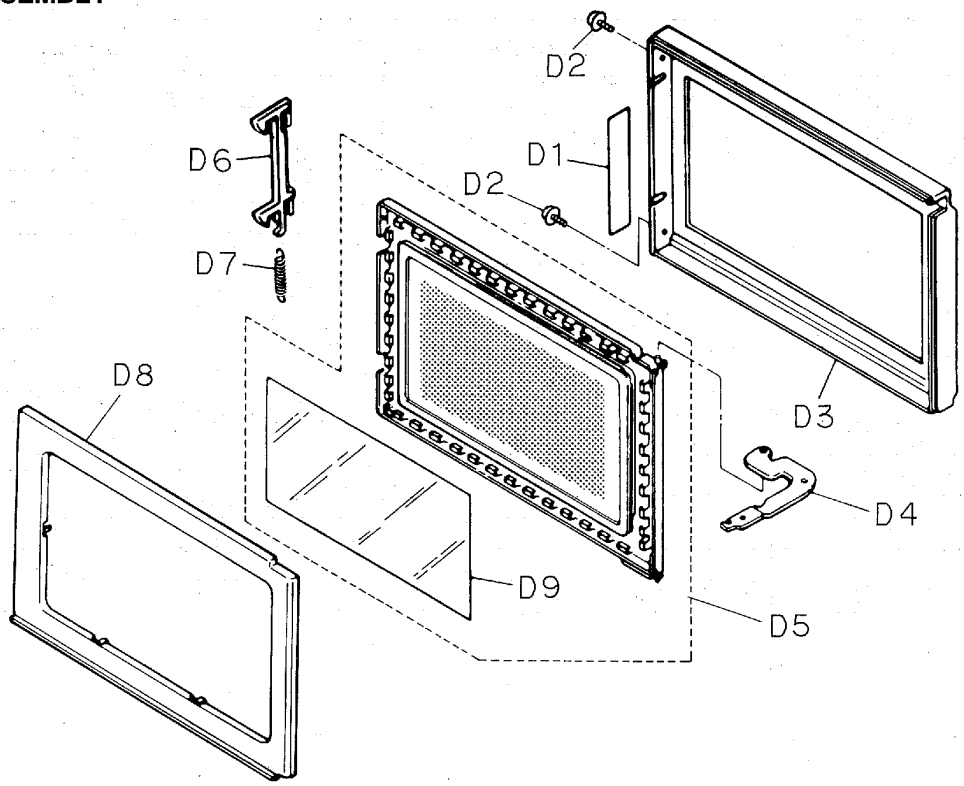
NOTE : When ordering replacement part(s), please use part number(s) shown in this parts list.
Do not use description of the part.
Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
Items marked * supplied by MMCA. (U.S.A.)

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
* 1		B00066260AP	CAUTION LABEL	1	NE-8021AR,NE-8051AR
* 1		B00067600CP	CAUTION LABEL	1	NE-8022CR,NE-8052CR
* 2		B00336260AP	FUSE LABEL	1	NE-8021AR,NE-8051AR
* 2		B00337600CP	FUSE LABEL	1	NE-8022CR,NE-8052CR
3		A010T5690AQ	SHELF	1	
* 4		AMQ0902000AH	CUSHION RUBBER A	2	
* 5		AMQ0902000BA	CUSHION RUBBER A	1	
* 6		AMQ0904000BB	CUSHION RUBBER A	1	
* 7		B100A3130AP	BASE	1	
8		A10083130AP	RUBBER FOOT	4	
* 9		B10093220AP	CABINET BODY	1	
* 10		B10495690AP	SOLID CUSHION	1	NE-8021AR,NE-8022CR
* 11		B10613130AP	REAR COVER	1	
* 12	⚠	B201A7760CP	OVEN	1	
* 13		B20194210AQ	ANTENNA SPACER	2	
* 14		B202K5690AQ	MOVING ANTENNA	1	
* 15		B20553130AP	COVER	1	
* 16	⚠	B30077050AP	LOWER HINGE	1	
* 17		B30204830AP	DOOR HOOK	1	
* 18		B31374830AP	HOOK SPACER B	1	
* 19		B31384830AP	HOOK SPACER C	1	
* 20		B40085950AP	FAN	1	
* 21		B40255540AP	AIR GUIDE A	1	
* 22		B41447630AP	ORIFICE	1	
* 23	⚠	B600B3140AP	H.V.TRANSFORMER	1	(1.5 KVA)
24		A601L5180AP	TEMP SENSOR	1	NE-8051AR,NE-8052CR
* 25		B60304740AQ	INCANDESCENT LAMP	1	
26	⚠	ANE61424L0AG	MICRO SWITCH	1	(V-16G-3C26) PRIMARY LATCH SWITCH
27	⚠	ANE61424L0AG	MICRO SWITCH	1	NE-8021AR,NE-8022CR (V-16G-3C26) SECONDARY LATCH SWITCH
27	⚠	A61424650AP	MICRO SWITCH	1	NE-8051AR,NE-8052CR (L-3C2-MR) SECONDARY LATCH SWITCH
28		A61446030AP	ANTENNA MOTOR	1	(2.5W)
29	⚠	A61454050AP	THERMAL CUTOUT	1	NE-8021AR,NE-8022CR,NE-8051AR (FOR OVEN)
* 30	⚠	B61456210AP	THERMAL CUTOUT	1	(FOR MAGNETRON)
* 31	⚠	B61524740AQ	SOCKET	1	

(S-335 APH)

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
32	⚠	ANE61784L0AG	MICRO SWITCH	1	(V-16G-2C25) SHORT SWITCH
* 33		B61884060AP	CAPACITOR HOLDER	1	
* 34	⚠	B62024000AP	DIODE,SI	1	
* 35	⚠	B62307050AP	FUSE	1	(15A)
36		A62314000AP	FUSE HOLDER	1	NE-8021AR,NE-8051AR
37		A62384650AP	SPACER	1	
* 38	⚠	B63907050AP	H.V.CAPACITOR	1	(1 μ F,AC2100V)
* 39		B692Y3350CP	NOISE FILTER	1	NE-8022CR
* 39		B692Y7600CP	NOISE FILTER (U)	1	NE-8052CR
* 40	⚠	B900C7630AP	AC CORD W/PLUG	1	NE-8021AR,NE-8051AR (120V)
* 40	⚠	B900C7650AP	AC CORD W/PLUG	1	NE-8022CR,NE-8052CR (120V)
41		ANE9082930AP	CLIP	2	(FOR COVER)
42		XTT4+8B	SCREW	4	(4X8) FOR MAGNETRON
* 43	⚠	2M210-M1E	MAGNETRON	1	
* 44		2Z-9D0A.S	FAN MOTOR	1	(AC,24W,SINGLE)

DOOR ASSEMBLY

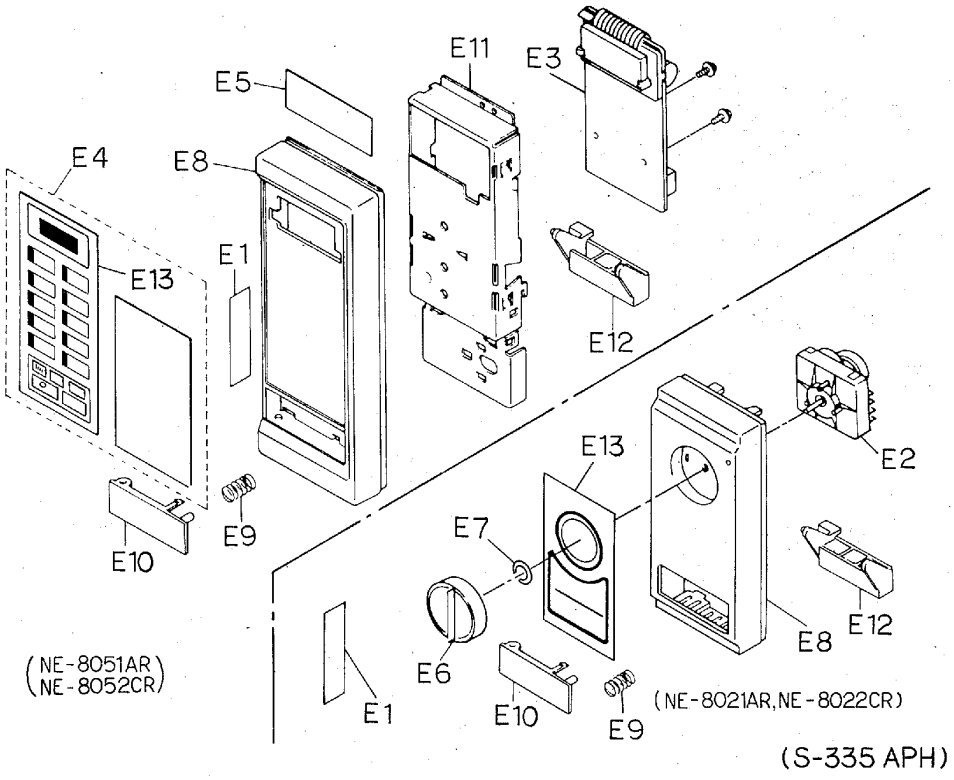


(S-335 APH)

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
* D1		B02454180AP	DHHS LABEL	1	NE-8021AR,NE-8051AR
* D1		B04114180CP	CSA LABEL	1	NE-8022CR,NE-8052CR
D2		XTBANE3+8BZ	SCREW	2	3X8
* D3	⚠	B302A3350AP	DOOR A (U)	1	(NOTE 1)
* D4	⚠	B30067050AP	UPPER HINGE	1	
* D5	⚠	B302K7200AP	DOOR E (U)	1	
* D6		B30187050AP	DOOR KEY	1	
* D7		B30214000AP	DOOR KEY SPRING	1	
* D8	⚠	B30857200AP	DOOR C	1	
* D9	⚠	B31457200AP	DOOR SCREEN A	1	

NOTE 1 : Please order DHHS label or CSA label together.

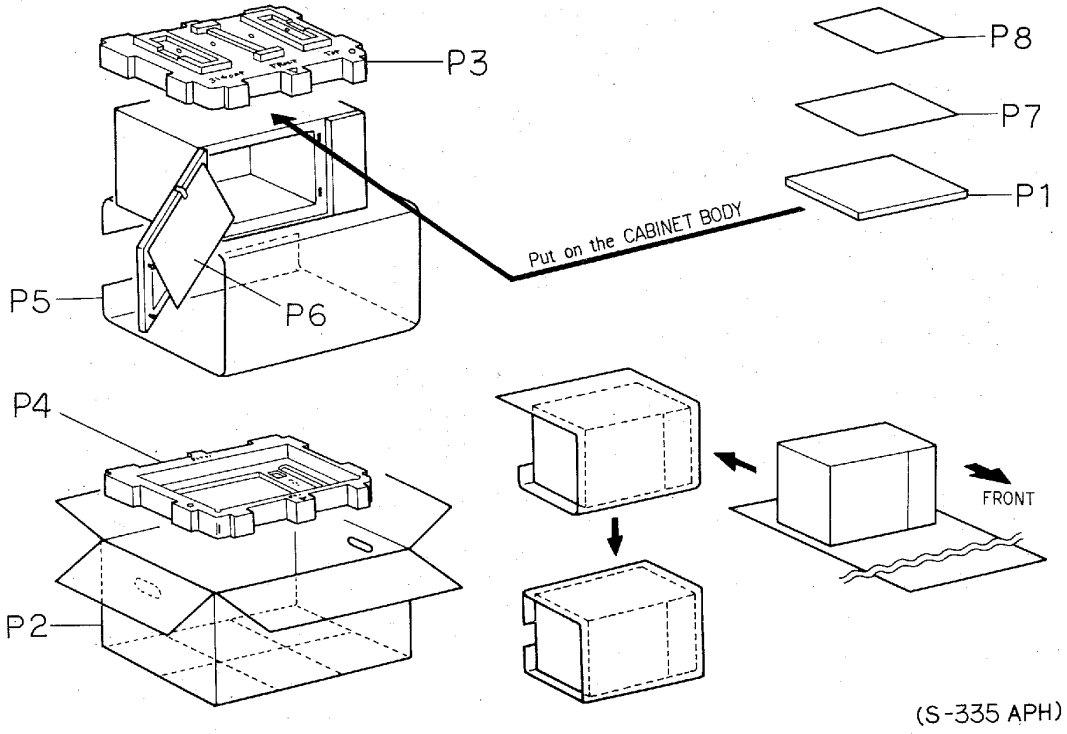
ESCUTCHEON BASE ASSEMBLY



Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
* E1		B00073350AP	NAME PLATE	1	NE-8021AR
* E1		B00073360AP	NAME PLATE	1	NE-8051AR
E2		A60013130AP	TIMER	1	NE-8021AR,NE-8022CR
E3		A603L3140AP	D.P.CIRCUIT (U)	1	NE-8051AR,NE-8052CR RTL (W/COMPONENT)
* E4		B630Y3360AP	MEMBRANE SWITCH (U)	1	NE-8051AR,NE-8052CR (W/ESCUTCHEON SHEET)
* E5		B80027050AP	DISPLAY FILTER	1	NE-8051AR,NE-8052CR
* E6		B80203350AP	TIMER KNOB	1	NE-8021AR,NE-8022CR
E7		ANE80217G0GS	TIMER KNOB SPRING	1	NE-8021AR,NE-8022CR
* E8		B80343350AP	ESCUTCHEON BASE	1	NE-8021AR,NE-8022CR (NOTE 2)
* E8		B80343360AP	ESCUTCHEON BASE	1	NE-8051AR,NE-8052CR (NOTE 2)
* E9		B80375950AP	COOK BUTTON SPRING	1	NE-8021AR,NE-8022CR
* E10		B80723350AP	DOOR OPENING BUTTON	1	
* E11		B81277050AP	BACK PANEL	1	NE-8051AR,NE-8052CR
* E12		B82567010AP	DOOR OPENING LEVER	1	
* E13		B83373350AP	ESCUTCHEON SHEET	1	NE-8021AR,NE-8022CR
* E13		B83373360AP	ESCUTCHEON SHEET	1	NE-8051AR,NE-8052CR

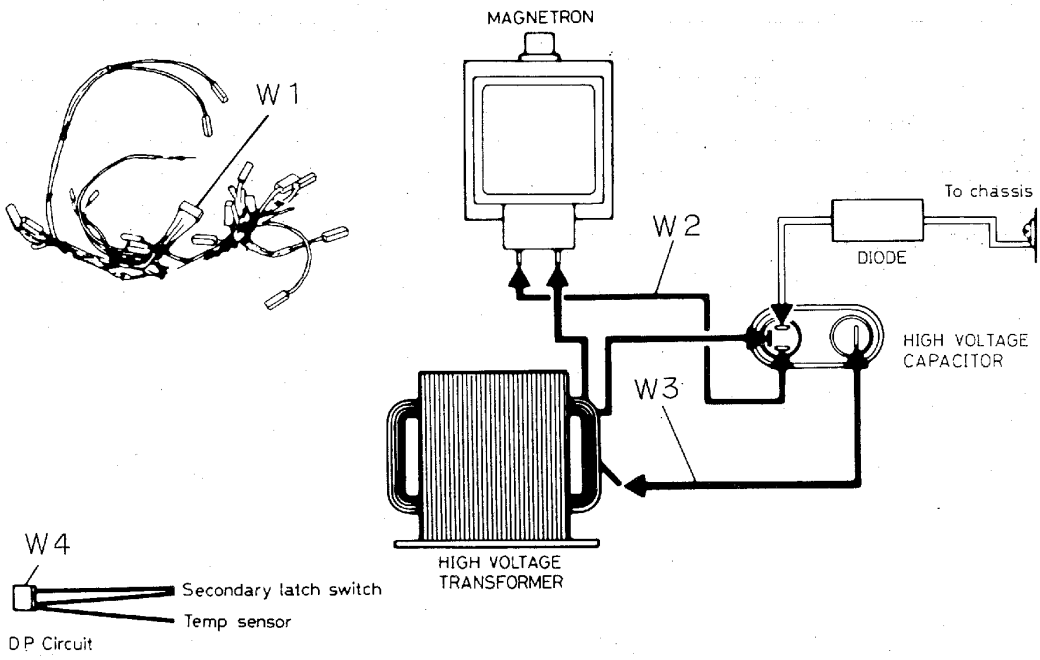
NOTE 2 : Please order name plate together.

PACKING AND ACCESORIES



Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
* P1		B00033130AP	INSTRUCTION BOOK	1	NE-8021AR,NE-8051AR
* P1		B00033210CP	INSTRUCTION BOOK	1	NE-8022CR,NE-8052CR
* P2		B01023140AP	PACKING CASE,PAPER	1	
* P3		B01043140AP	UPPER FILLER	1	
* P4		B01053140AP	LOWER FILLER	1	
* P5		B01065640AP	VINYL SHEET	1	
* P6		B01075640AP	DOOR SHEET	1	
* P7		B03343140AP	MENU LABEL	1	NE-8051AR,NE-8052CR
* P8		B04203140AP	OPERATING GUIDE	1	NE-8051AR
* P8		B04203220CP	OPERATING GUIDE	1	NE-8052CR

WIRING MATERIAL



(S-335 APH)

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
* W1		B030A3120AP	LEAD WIRE HARNESS	1	NE-8021AR
* W1		B030A3110CP	LEAD WIRE HARNESS	1	NE-8022CR
* W1		B030A3140AP	LEAD WIRE HARNESS	1	NE-8051AR
* W1		B030A3220CP	LEAD WIRE HARNESS	1	NE-8051CR
* W2		B03505540AP	LEAD WIRE	1	
* W3		B03515540AP	LEAD WIRE	1	
* W4		B03535300AP	LEAD WIRE	1	NE-8051AR,NE-8052CR

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
REF NO. 39 NOISE FILTER (U)					
C1		ECQU2A104MN	POLYESTER CAPACITOR	1	0.1MF, 250V, ±20%
C2,3	⚠	ECKDNS472MEX	CERAMIC CAPACITOR	2	0.0047MF, 250V, ±20%
F1		A62316010BP	FUSE HOLDER	2	
L1		A621A7600CP	FILTER COIL	1	
R1		ERD25FJ564S	CARBON FILM RESISTOR	1	560kΩ, 1/4W, ±5%
ZNR2,3		ERZC10DK112W	VARISTOR	2	
ZNR1		ERZC10DK471F	VARISTOR	1	(470V) NN-8022CR

DIGITAL PROGRAMMER CIRCUIT

(For NE-8051AR, NE-8052CR)

PARTS LIST

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
BZ	AEFB22EP2002	BUZZER	1	
C1	ECEA1VU102E	ELECTROLYTIC CAPACITOR,AL	1	1000μF/35V/−10% +30%
C2	ECEA1HU101B	ELECTROLYTIC CAPACITOR,AL	1	100μF/50V/−10% +30%
C3,4,6,7,18	AECF50F104Z	CERAMIC CAPACITOR	7	0.1μF/50V/−20% +80%
C5	ECEA1CU100B	ELECTROLYTIC CAPACITOR,AL	1	10μF/16V/−10%+ 30%
C8,9,11,13, 14,15	ECBT1E103ZF5	CERAMIC CAPACITOR	6	0.01μF/25V/−20% +80%
C12	ECEA1HU2R2B	ELECTROLYTIC CAPACITOR,AL	1	2.2μF/50V/−10% +30%
CN1	AEEMMC01505W	CONNECTOR	1	
CN2	AEEM11FDZ0TM	CONNECTOR	1	
CN3	AEEMMC00D04W	CONNECTOR	1	
CX1	EFOGC4194T4	CERAMIC RESONATOR	1	4.19MHZ
D1,2,3	AEDNERA1502	DIODE,SI	3	
D4,5,6,7,8, 10	MA196-(TA5)	DIODE,SI	6	
DISP	A64564100BP	FLUORESCENT TUBE	1	
IC1	AEIC50940337	L.S.I	1	
IC2	AEICSN102977	I.C.	1	
IC3	AEICX24C01	I.C.	1	
Q1	2SD2006-RTA	TRANSISTOR,SI 250MW	1	(120MHZ)
Q2	2SA720-RTA	TRANSISTOR,SI 400MW	1	
Q3,8	UN4111-(TA)	TRANSISTOR,SI 300MW	2	
Q4,9	UN4211-(TA)	TRANSISTOR,SI 300MW	2	
Q7	2SC1318-RTA	TRANSISTOR,SI 400MW	1	(200MHZ)
R1,2	ERDS2TJ201T	CARBON FILM RESISTOR	2	200Ω,1/4W,±5%
R3,4	ERDS2TJ302T	CARBON FILM RESISTOR	2	3KΩ,1/4W,±5%
R5,11,14,19, 22,23	ERDS2TJ103T	CARBON FILM RESISTOR	6	10KΩ,1/4W ±5%
R6	ERDS2TJ301T	CARBON FILM RESISTOR	1	300Ω,1/4W,±5%
R7,8,10	ERDS2TJ102T	CARBON FILM RESISTOR	3	1.0KΩ,1/4W ±5%
R9	ERDS2TJ332T	CARBON FILM RESISTOR	1	3.3KΩ,1/4W ±5%
R12	ERDS2TJ333T	CARBON FILM RESISTOR	1	33KΩ,1/4W ±5%
R13,24	ERDS2TJ104T	CARBON FILM RESISTOR	2	100KΩ,1/4W ±5%
R15,18	ERDS2TJ300T	CARBON FILM RESISTOR	2	30Ω,1/4W,±5%
R20	ERDS2TJ432T	CARBON FILM RESISTOR	1	4.3KΩ,1/4W ±5%
R21	ERDS2TJ105T	CARBON FILM RESISTOR	1	1MΩ,1/4W,±5%

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
R25	ERDS2TJ3R0T	CARBON FILM RESISTOR	1	3Ω 1/4W ±5%
R27	ERDS2TJ271T	CARBON FILM RESISTOR	1	270Ω,1/4W,±5%
RY1	AEG5J1EG18B	POWER RELAY	1	(18V)
RY3	AEAWJZDC18	POWER RELAY	1	(18V)
SPACER	A82845570AP	SPACER CUSHION	1	
T1	A62494210AQ	L.V.TRANSFORMER	1	ETP41K210A
Z1	AEXB04223J	COMPOUND-RESISTOR	1	22K X 4
Z2	AEXB04104J	COMPOUND-RESISTOR	1	100K X 4
ZD1	AEDZ5R6ES3T1	DIODE,SI	1	RD5R6ES3T1
ZD2	AEDZ27ES3T1	DIODE,SI	1	RD27ES3T1
ZD3	AEDZ4R3ES1T1	DIODE,SI	1	RD4R3ES1T1
ZD4	AEDZ10ES1T1	DIODE,SI	1	RD10ES1T
ZNR	ERZC10DK471F	VARISTOR	1	

SERVICE FIXTURES AND TOOLS

EXTENSION CABLES

NOTE: To be used when repairing the DPC board assembly directly on the oven for easy access of the board.

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
	AT40M004	4 pin Extension Cable	1	Cable No. 16
	AT40M005	5 pin Extension Cable	1	Cable No. 17
	AT40E006	1 pin×6 Extension Cable	1	Cable No. 9

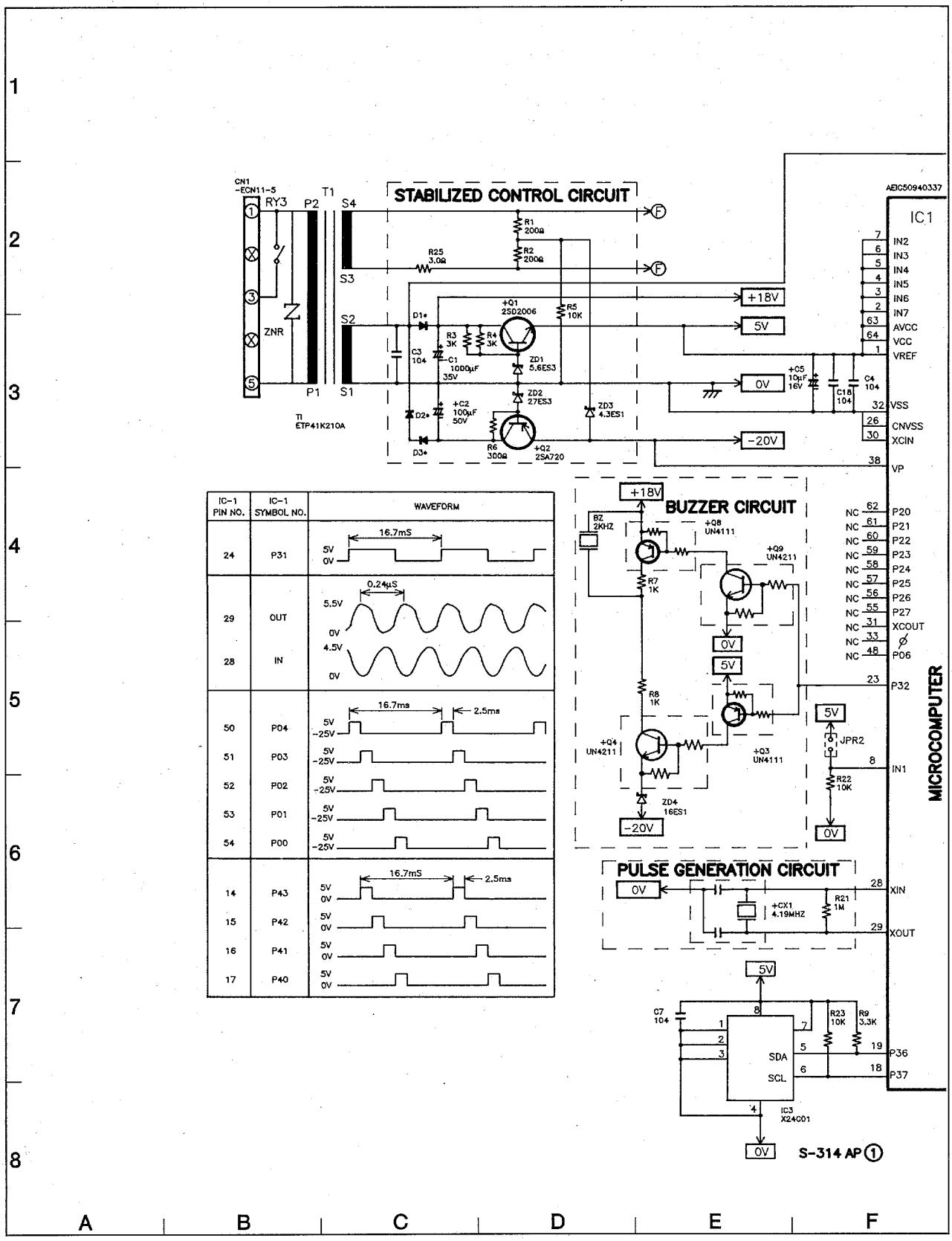
DPC COMMON CHECKER AND ITS CABLE

NOTE: To be used only when DPC common checker is available.

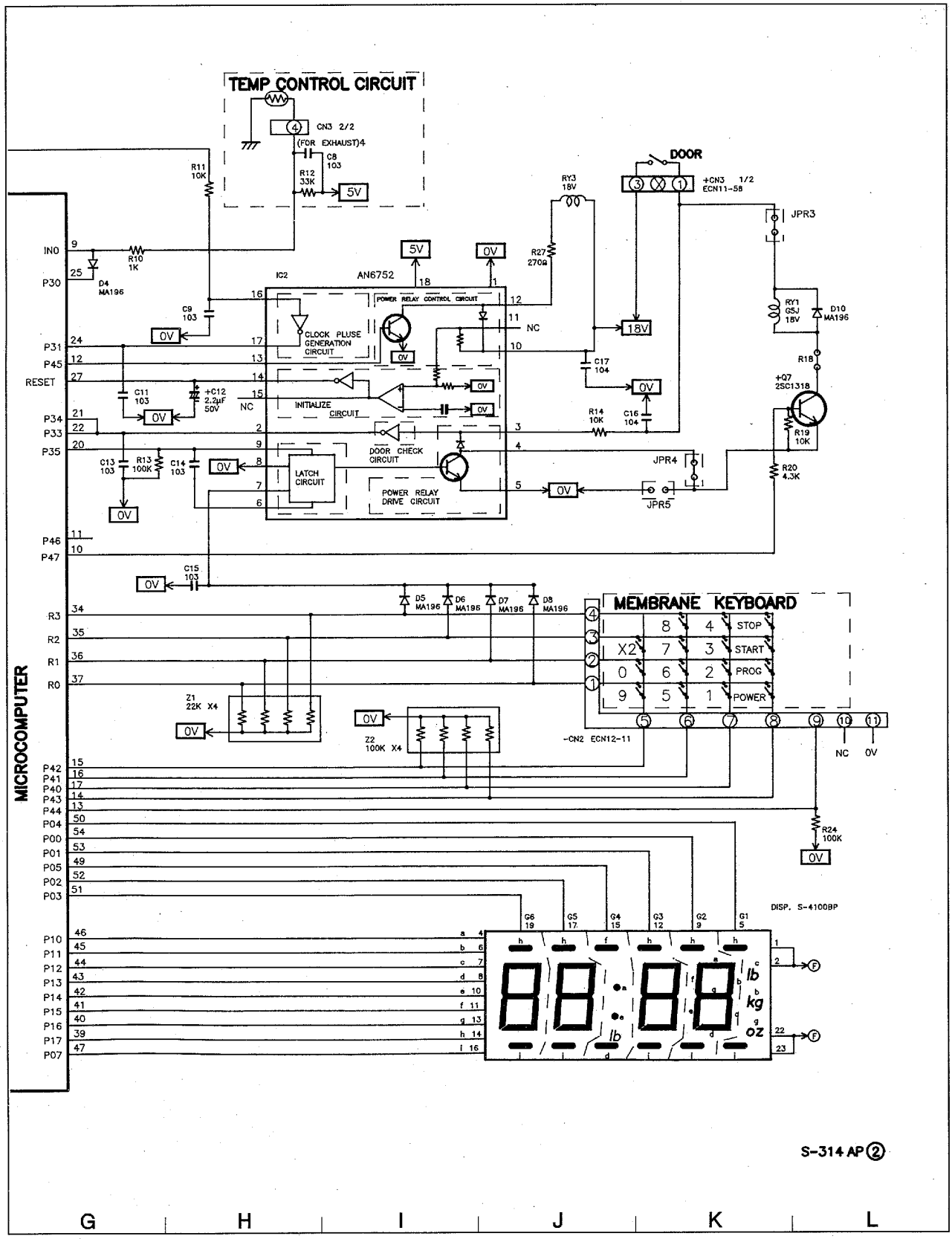
Ref. No.	Part No.	Description	Pcs/ Set	Remarks
	ANE600ZK70AP	DPC. Common Checker	1	
	AT30A5500AP	DPC. Checker Cable	1	NOTE

DIGITAL PROGRAMMER CIRCUIT (NE-8051AR/8052CR)

SCHEMATIC DIAGRAM



IC-1 PIN NO.	IC-1 SYMBOL NO.	WAVEFORM
24	P31	16.7mS, 5V / 0V
29	OUT	0.24μS, 5.5V / 0V
28	IN	4.5V / 0V
50	P04	16.7ms, 2.5ms, 5V / -25V
51	P03	5V / -25V
52	P02	5V / -25V
53	P01	5V / -25V
54	P00	5V / -25V
14	P43	16.7mS, 2.5ms, 5V / 0V
15	P42	5V / 0V
16	P41	5V / 0V
17	P40	5V / 0V


TEMP CONTROL CIRCUIT
CN3 2/2
(FOR EXHAUST)4
C8 103
R12 33K
5V
R11 10K
DOOR
+CN3 1/2 ECN11-58
RY3 18V
JPR3
MICROCOMPUTER
IN0
P30
P31
P45
RESET
P34
P33
P35
P46
P47
R10 1K
D4 MA196
C9 103
IC2
AN6752
POWER RELAY CONTROL CIRCUIT
CLOCK PLUSE GENERATION CIRCUIT
INITIALIZE CIRCUIT
DOOR CHECK CIRCUIT
LATCH CIRCUIT
POWER RELAY DRIVE CIRCUIT
R27 270Ω
18V
NC
C17 104
R14 10K
C16 104
C11 103
+C12 2.2μF 50V
C13 103
R13 100K
C14 103
C15 103
RY1 G5J 18V
D10 MA196
R18
+Q7 2SC1318
R19 10K
R20 4.3K
JPR4
JPR5
0V
D5 MA196
D6 MA196
D7 MA196
D8 MA196
MEMBRANE KEYBOARD
STOP
START
PROG
POWER
X2
-CN2 ECN12-11
NC
R24 100K
Z1 22K X4
Z2 100K X4
R3
R2
R1
R0
P42
P41
P40
P43
P44
P04
P00
P01
P05
P02
P03
P10
P11
P12
P13
P14
P15
P16
P17
P07
DISP. S-4100BP
lb
kg
oz
S-314 AP②
G
H
I
J
K
L